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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER
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NAHAR, QAMRUN

ART UNIT	PAPER NUMBER
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2191

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/846,222

Applicant(s)

HUNDT, ROBERT

Examiner

Qamrun Nahar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-11 and 13-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,10,11,13-15 and 19-28 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the amendment filed on 12/16/04.
2. The objections to claims 6, 15 and 16 are withdrawn in view of applicant's amendment.
3. The rejection under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention to claims 9 and 18 is withdrawn in view of applicant's amendment.
4. The rejection under 35 U.S.C. 102(e) as being anticipated by Gorshkov (U.S. 6,490,721) to claims 8-9 and 17-18 is withdrawn in view of applicant's amendment and remarks/arguments.
5. The rejection under 35 U.S.C. 103(a) as being unpatentable over Gorshkov (U.S. 6,490,721) in view of Kim (U.S. 6,003,143) to claims 7 and 16 is withdrawn in view of applicant's amendment and remarks/arguments.
6. Claims 1, 4-10 and 13-19 have been amended.
7. Claims 3 and 12 have been canceled.
8. Claims 21-28 have been added.
9. Claims 1-2, 4-11 and 13-28 are pending.
10. Claims 1-2, 4-6, 10-11, 13-15 and 19-28 stand finally rejected under 35 U.S.C. 102(e) as being anticipated by Gorshkov (U.S. 6,490,721).
11. Claims 7-9 and 16-18 stand finally objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Amendment*

*Claim Rejections - 35 USC § 102*

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-2, 4-6, 10-11, 13-15 and 19-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Gorshkov (U.S. 6,490,721).

**Per Claim 1 (Amended):**

The Gorshkov patent discloses:

- **a method for augmenting a debugger having debugging functionality used to debug a first program** (“A first aspect of the invention is a method for debugging a computer program comprising the steps of developing a debugging subprogram having a user action for debugging a target program, loading the target program for execution, inserting a call to the debugging subprogram into a memory image of the target program during the loading step, and executing the target program.” in column 2, lines 58-64)
- **providing the debugger; providing a second program having second-program functionality** (“Figure 1 illustrates the primary components of the preferred embodiment.

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Target program 10 is the existing program in executable format that is to be debugged. ... User action libraries 12 are created by compiling one or more debugging subprograms 16 (containing user actions) into linkable libraries (similar to Dynamic Link Library (DLL) in a Windows<sup>TM</sup> environment). This compiling procedure is accomplished by action compiler 14 which compiles the source code of subprograms 16, which are written in ANSI C for example, into machine code of user action libraries 12. These files together with target program 10 are input to dynamic action linker 18. ... Dynamic action linker 18 reads target program 10 and user action libraries 12 and creates two processes. A first process 20 created by dynamic action linker 18 consists of target program 10 and the debugging user actions needed from user action libraries 12. A second process 22 created by dynamic action linker 18 handles requests from process 20, to modify code locations in process 20 as described in detail below.” in column 3, lines 29-53; second process 22 is interpreted as the second program having second-program functionality)

**- and providing integration code for invoking a piece of code to perform a task in response to a debugging command, based on types of a breakpoint; wherein if the breakpoint is a debugging breakpoint, then the piece of code is selected from the debugging functionality, else if the breakpoint is an instrumentation breakpoint, then the piece of code is selected from the second-program functionality** (“In step E, child process 22 has received the acknowledgment from parent process 20 of a successful attachment and continues on to patch into parent process 40 a call to the dynamic user actions runtime start routines, i.e. the debugging actions. In particular, calls to user actions in user action libraries 12 are inserted in the memory image of target program 10 (which is running as will be seen below) and user action libraries 12

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are loaded into RAM in a separate area. In step F, child process waits for a new request for patching service from parent process 20. In step G, child process 22 has received a request from parent process 20 and executed the request. Steps F and G are repeated until the task is terminated by parent process 20 ... FIG. 3 illustrates Step E of FIG. 2, i.e., patching of dynamic user actions into target program 10 in detail. Child process 22 created by dynamic action linker 18 must patch the memory image of target program 10 so that it will call the newly loaded user action routines. In step E1, child process 22 allocates space for the patch in the patch area in parent process 20. In step E2, child process 22 replaces an instruction (or instructions) at the requested program location with a branch instruction to the patch area. In step E3, child process 22 generates code to call the user action.” in column 3, line 67 to column 4, lines 1-13; and column 4, lines 29-38; when the child process 22 receives a request for patching from the parent process 20, the location of the parent process 20 where the request is being made from is the location of the instrumentation breakpoint. If the debugging actions have already been integrated within the target program 10, the request for patching is not made. That is, the target program continues to debug using the debugging actions that has already been integrated; the debugging breakpoint has already been inserted and debugging functionality is selected.).

**Per Claim 2:**

The Gorshkov patent discloses:

- **further comprises the step of using an instrumentor as the second program** (column 4, lines 29-38).

**Per Claim 4 (Amended):**

The Gorshkov patent discloses:

- **further comprises the step of making the piece of code an executable part of the first program** (column 4, lines 29-38; the debugging actions are patched/instrumented into the target program).

**Per Claim 5 (Amended):**

The Gorshkov patent discloses:

- **further comprises the step of using a trampoline as the piece of code** (column 4, lines 29-38; the child process 22 is the piece of code that is invoked when instrumentation is required; the address of the child process 22 is used as a trampoline).

**Per Claim 6 (Amended):**

The Gorshkov patent discloses:

- **wherein the debugging command is selected from one or a combination of: input from a user using the debugger; a script file associated with the first program; and a configuration file associated with the first program** (column 3, lines 29-53; user action libraries are input

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from a user; furthermore, the claim recites “one or a combination of”, which means only one limitation from the list is required to meet the requirement of the claim.).

**Per Claims 10 (Amended), 11 & 13-15 (Amended):**

These are system versions of the claimed method discussed above (claims 1-2 and 4-6, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Gorshkov.

**Per Claims 19 (Amended) & 20:**

These are computer-readable medium versions of the claimed method discussed above (claims 1-2, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Gorshkov.

**Per Claim 21 (New):**

The Gorshkov patent discloses:

- wherein the piece of code is stored in a library (column 4, lines 4-8).

**Per Claim 22 (New):**

The Gorshkov patent discloses:



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- wherein the integration code generates the piece of code (column 4, lines 4-8).

**Per Claim 23 (New):**

The Gorshkov patent discloses:

- wherein the integration code keeps track of modifications to the first program, and, if appropriate, undoes the modifications (column 4, lines 48-53).

**Per Claim 24 (New):**

The Gorshkov patent discloses:

- wherein in a loop of more than one time, execution of code in the loop is transferred to the debugger one time (column 4, lines 57-65).

**Per Claims 25-28 (New):**

These are system versions of the claimed method discussed above (claims 21-24, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Gorshkov.

***Allowable Subject Matter***

14. Claims 7-9 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

15. Applicant's arguments filed on 12/16/04 have been fully considered but they are not persuasive.

*In the remarks, the applicant argues that:*

a) In response to the claimed element "providing a second program having second-program functionality," the Office Action asserted "Figure 1 illustrates the ...

From this lengthy citation, the Office Action failed to clearly correspond an element of Gorshkov to the claimed second program. In addition to other elements, this citation discloses both the first process 20 and the second process 22. However, regardless of whether the claimed second program was equated to the first process 20, the second process 22 or other elements in the cited paragraph, amended claim 1 recites that the piece of code to perform a task in response to a debugging command is selected from the second-program functionality if the breakpoint is an instrumentation breakpoint, which is not disclosed, suggested, or made obvious by Gorshkov. Even though Gorshkov's second process 22 "handles requests from process 20," Gorshkov does teach, suggest, or make obvious that the piece of code to perform a task is selected from the second-program functionality if the breakpoint is an instrumentation breakpoint.

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*Examiner's response:*

a) Examiner strongly disagrees with applicant's assertion that Gorshkov fails to disclose the claimed limitations recited in claim 1. Gorshkov clearly shows each and every limitation in claim 1.

As previously pointed out in the last Office Action (Mailed on 05/06/2004), Gorshkov teaches providing a second program having second-program functionality (column 3, lines 29-53; second process 22 is interpreted as the second program having second-program functionality); and providing integration code for invoking a piece of code to perform a task in response to a debugging command, based on types of a breakpoint; wherein if the breakpoint is a debugging breakpoint, then the piece of code is selected from the debugging functionality, else if the breakpoint is an instrumentation breakpoint, then the piece of code is selected from the second-program functionality (column 3, line 67 to column 4, lines 1-13; and column 4, lines 29-38; when the child process 22 receives a request for patching from the parent process 20, the location of the parent process 20 where the request is being made from is the location of the instrumentation breakpoint. If the debugging actions have already been integrated within the target program 10, the request for patching is not made. That is, the target program continues to debug using the debugging actions that has already been integrated; the debugging breakpoint has already been inserted and debugging functionality is selected.).

In addition, see the rejection above in paragraph 13 for rejection to claim 1.

*In the remarks, the applicant argues that:*

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b) In response to the claim element "providing integration code for analyzing commands used to debug the first program, and invoking appropriate pieces of code to perform tasks in responding to such commands; wherein the appropriate pieces of code are selected from one or a combination of functionality provided in a library, the debugging functionality, and the second-program functionality" the Office Action cited "[i]n step E ...

Again, the Office Action combined many of the claimed elements into one lengthy response and thus failed to correspond each element of the claim to an element of Gorshkov. The claimed elements include, for example, integration code, appropriate pieces of code to perform tasks, the selection of the pieces of code, etc.

However, claim 1 is being amended to claim in the alternative language, and include elements clearly not disclosed, suggested, or made obvious by Gorshkov. For example, Gorshkov does not disclose, suggest, or make obvious the integration code, which invokes a piece of code to perform a task in response to a debugging command, based on types of a breakpoint. Additionally, Gorshkov does not disclose, suggest or make obvious "wherein if the breakpoint is a debugging breakpoint, then the piece of code is selected from the debugging functionality, else if the breakpoint is an instrumentation breakpoint, then the piece of code is selected from the second- program functionality."

Because claim 1 recites limitations patentably distinguished from Gorshkov, claim 1 is patentable.

*Examiner's response:*

b) Examiner strongly disagrees with applicant's assertion that Gorshkov fails to disclose the claimed limitations recited in claim 1. Gorshkov clearly shows each and every limitation in claim 1.

As previously pointed out in the last Office Action (Mailed on 05/06/2004), Gorshkov teaches providing integration code for invoking a piece of code to perform a task in response to a debugging command, based on types of a breakpoint; wherein if the breakpoint is a debugging breakpoint, then the piece of code is selected from the debugging functionality, else if the breakpoint is an instrumentation breakpoint, then the piece of code is selected from the second-program functionality (column 3, line 67 to column 4, lines 1-13; and column 4, lines 29-38; when the child process 22 receives a request for patching from the parent process 20, the location of the parent process 20 where the request is being made from is the location of the instrumentation breakpoint. If the debugging actions have already been integrated within the target program 10, the request for patching is not made. That is, the target program continues to debug using the debugging actions that has already been integrated; the debugging breakpoint has already been inserted and debugging functionality is selected.).

In addition, see the rejection above in paragraph 13 for rejection to claim 1.

*In the remarks, the applicant argues that:*

c) Regarding claim 2, the Office Action asserted that Gorshkov's paragraph of column 4, lines 29-38 discloses "the step of using an instrumentor as the second program." However, this cited paragraph discloses patching dynamic user actions into target program 10' child process 22 must patch the memory image of target program 10 so that it will call the newly loaded action

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routines; child process 22 allocates space for the patch in the patch area in parent process 20; child process 22 replaces an instruction, generates code to the user action, etc. As can be seen, this cited paragraph does not disclose an instrumentor being used as the second program, and patching dynamic user actions into a target program is not patentably comparable to using an instrumentor as the second program. Further, as claimed, the second program or the instrumentor includes its functionality, and if the breakpoint is an instrumentation breakpoint, then the piece of code to perform a task in response to a debugging command selected from the functionality of the instrumentor.

*Examiner's response:*

c) The Examiner has already addressed the applicant's arguments regarding the second program in the Examiner's Response (a) and (b) above. Furthermore, an instrumentor modifies code. Therefore, the second program patching the target program is interpreted as the second program instrumenting the target program. In addition, see the rejection above in paragraph 13 for rejection to claim 2.

*In the remarks, the applicant argues that:*

d) Regarding claim 4, the Office Action asserted that Gorshkov's paragraph of column 4, lines 29-38 discloses the method "further comprises the step of making the first piece of code an executable part of the first program." The cited paragraph does not disclose this claimed element. However, claim 4 is being amended to depend on claim 1 instead of claim 3 and recites "[t]he method of claim 1 further comprises the step of making the piece of code an executable part of

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the first program." Even though Gorshkov's cited paragraph discloses "patching of dynamic user actions into target program 10," because the dynamic user actions of Gorshkov do not correspond to the claimed "piece of code to perform a task in response to a debugging command, based on types of a breakpoint," making the piece of code an executable part of the first program is patentably distinguished from patching dynamic user actions into target program 10.

*Examiner's response:*

d) Examiner strongly disagrees with applicant's assertion that Gorshkov fails to disclose the claimed limitations recited in claim 4. Gorshkov clearly shows each and every limitation in claim 4. Gorshkov teaches further comprises the step of making the piece of code an executable part of the first program (column 4, lines 29-38; the debugging actions are patched/instrumented into the target program). In addition, see the rejection above in paragraph 13 for rejection to claim 4.

*In the remarks, the applicant argues that:*

e) Regarding claim 5, the Office Action asserted that Gorshkov's paragraph of column 4, lines 29-38 discloses "further comprises the step of using a trampoline as the first piece of code." The cited paragraph does not disclose this claimed element. However, claim 5 is being amended to depend on claim 1 instead of claim 3 and recites "[t]he method of claim 1 further comprises the step of using a trampoline as the piece of code." The cited paragraph discusses patching of user actions into target program 10, but does not disclose a trampoline, and therefore cannot

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disclose using a trampoline as the piece of code that performs a task in response to a debugging command based on types of a breakpoint.

*Examiner's response:*

e) Examiner strongly disagrees with applicant's assertion that Gorshkov fails to disclose the claimed limitations recited in claim 5. Gorshkov clearly shows each and every limitation in claim 5. Gorshkov teaches further comprises the step of using a trampoline as the piece of code (column 4, lines 29-38; the child process 22 is the piece of code that is invoked when instrumentation is required; the address of the child process 22 is used as a trampoline). In addition, see the rejection above in paragraph 13 for rejection to claim 5.

*In the remarks, the applicant argues that:*

f) Regarding claim 6, the Office Action asserted that Gorshkov's paragraph of column 3, lines 29-53 discloses that "wherein the commands are selected from one or a combination of: input from a user using the debugger; a script file associated with the first program; and a configuration file associated with the first program." Gorshkov's cited paragraph discusses that target program 10 was compiled from source code; user action libraries are created by compiling one or more debugging subprograms, but has nothing to do with a debugging command being selected from one or a combination of input from a user using the debugger, a script file associated with the first program, a configuration file associated with the first program. If the target program 10 corresponds to the first program, then, to be parallel with claim 6, Gorshkov



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must disclose the debugging command is selected from a script file associated with the target program, a configuration file associated with the target program, etc., but fails to do so.

*Examiner's response:*

f) Examiner strongly disagrees with applicant's assertion that Gorshkov fails to disclose the claimed limitations recited in claim 6. Gorshkov clearly shows each and every limitation in claim 6. Gorshkov teaches wherein the debugging command is selected from **one or a combination of**: input from a user using the debugger; a script file associated with the first program; and a configuration file associated with the first program (column 3, lines 29-53; user action libraries are input from a user; furthermore, the claim recites "one or a combination of", which means only one limitation from the list is required to meet the requirement of the claim.). In addition, see the rejection above in paragraph 13 for rejection to claim 6.

*In the remarks, the applicant argues that:*

g) Claims 10-18 recites limitations corresponding to claims 1-9, and are therefore patentable for at least the same reasons as claims 1-9.

Claims 19 and 20 recite limitations corresponding to claims 1 and 2, and are therefore patentable for at least the same reasons as claims 1 and 2.

*Examiner's response:*

g) The Examiner has already addressed the applicant's arguments regarding claims 1-9 in the Examiner's Responses (a) thru (f) above.

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*In the remarks, the applicant argues that:*

h) Added claims 21-24 depend from claim 1 and are therefore patentable for at least the same reasons as claim 1. Claims 21-24 are also patentable for their own limitations.

Added claims 25-28 depend from claim 10 and are therefore patentable for at least the same reasons as claim 10. Claims 25-28 are also patentable for their own limitations.

*Examiner's response:*

h) The Examiner has already addressed the applicant's arguments regarding claims 1 and 10 in the Examiner's Responses (a), (b), and (g) above.

### ***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

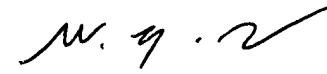
17. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Fridays from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached on (571) 272-3695. The fax phone number for the organization where this application or processing is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QN  
April 27, 2005

  
WEI Y. ZHEN  
PRIMARY EXAMINER